

Notice of Allowability

Application No.

10/668,080

Examiner

Leo Boutsikaris

Applicant(s)

KIM ET AL.

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to application filed on 9/22/2003.
2. ☒ The allowed claim(s) is/are 1-17.
3. ☒ The drawings filed on 22 September 2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 - * Certified copies not received: _____

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 1/9/04
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Ms. Molly Sauter (Reg. No. 46,457) on 5/13/2004.

The application has been amended as follows:

IN THE SPECIFICATION

In line 1 of paragraph [0001], the phrase "is a continuation in part and" is deleted.

IN THE CLAIMS

In claim 11, line 8, "high resolution" is deleted.

In claim 14, line 8, "high resolution" is deleted.

In claim 15, line 1, "13" is changed to "14".

The following is an examiner's statement of reasons for allowance:

Claims 1-17 are allowable over the prior art of record for at least the reason that even though the prior art discloses phase imaging systems for imaging surface discontinuities using digital holography methods, the prior art fails to teach or reasonably suggest, regarding claims 1-12, a digital holographic phase-imaging method comprising the steps of generating a digital holographic phase map of an object at a first and at a second wavelength, subtracting the

respective phase maps, and resolving the fringe number for each pixel phase value, regarding claims 13-15, a holographic phase-imaging method comprising the steps of generating a first phase map at a first wavelength, generating a second phase map at a second wavelength, subtracting the second phase map from the first phase map and resolving the fringe number for each pixel phase value, and regarding claims 16-17, a digital holographic phase-imaging system comprising a phase map generator to generate a first phase map comprising a plurality of pixels at a first wavelength and a second phase map comprising a plurality of pixels at a second wavelength, and a contour generator to determine the fringe number of the plurality of pixels of the plurality of phase maps, as set forth by the claimed combination.

Cuche (Optics Letters article) discloses a method of phase imaging using single-wavelength digital holography. Servin (Applied Optics article) discloses a method for resolving phase images using regularized phase-tracking phase unwrapping algorithms. Gutmann (Applied Optics article) discloses a method for resolving phase images using branch-cut phase unwrapping algorithms. Finally, Cuche (US 6,262,818) discloses a method for reconstructing digital holograms recorded by phase contrast imaging.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Leo Boutsikaris whose telephone number is 571-272-2308.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Leo Boutsikaris, Ph.D.
Patent Examiner, AU 2872
May 13, 2004

